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AUTHOR Gillig, Scott E.; And Others
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ABSTRACT

This study was designed to find whether simple or complex messages are more effective in promoting safe sex behaviors. Two-hundred-forty college freshmen (131 males and 109 females) were assigned to three groups. The "simple messages" group received crucial messages. The "complex messages" group received crucial messages embedded within a rich context of HIV/AIDS information. A control group received no HIV/AIDS-related information. Dependent measures included: the HIV/AIDS Knowledge Questionnaire and HIV/AIDS Behavioral Survey. Following treatment, the "complete messages" group knew more than the "simple messages" group ($p<.05$) while there were no differences in intended behaviors. At 1-week follow-up, both the "complex messages" and the control groups knew more than the "simple messages" group ($p<.05$), while the "complex messages" group intended to practice safer sex that the "simple messages" group ($p<.05$). This study provides evidence that a complex educational format may better promote both HIV/AIDS knowledge and risk-minimizing choices. (Contains 21 references.) (Author)

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Comparison of Simple and Complex Messages on Safe Sex Practices and Knowledge of HIV/AIDS

Scott E. Gillig

Departments of Counseling and Psychology

Heidelberg College

Jeannine R. Studer & Charles E. Moon

Department of Education

Heidelberg College

Melanie A. Owen

Mercy Hospital of Tiffin, Tiffin, Ohio

Author's Note:

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Abstract

This study was designed to find whether simple or complex messages are more effective in promoting safe sex behaviors. Two-hundred-forty college freshmen (131 males and 109 females) were assigned to three groups. The "simple messages" group received crucial messages. The "complex messages" group received crucial messages embedded within a rich context of HIV/AIDS information. A control group received no HIV/AIDS- related information. Dependent measures included; the HIV/AIDS Knowledge Questionnaire and HIV/AIDS Behavioral Survey. Following treatment, the "complex messages" group knew more than the "simple messages" group ($p < .05$) while there were no differences in intended behaviors. At one week follow-up, both the "complex messages" and the control groups knew more than the "simple messages" group ($p < .05$), while the "complex messages" group intended to practice safer sex than the "simple messages" group ($p < .05$). This study provides evidence that a complex educational format may better promote both HIV/AIDS knowledge and risk-minimizing choices.

KEY WORDS: HIV/AIDS education; HIV/AIDS safe sex behaviors; HIV/AIDS knowledge, HIV/AIDS messages.

Comparison of Simple and Complex Messages on Save Sex Practices and Knowledge of HIV/AIDS

AIDS (Acquired Immunodeficiency Syndrome) is one of the most deadly diseases in our society today. Even though a decade of education about this life-threatening disease has been presented, the virus that causes this disease is still infecting individuals at a rapid pace.

AIDS is caused by the Human Immunodeficiency Virus (HIV) and the course of this disease is difficult to predict as some infected individuals may have no symptoms for many years, some may have less severe symptoms or AIDS Related Complex (ARC) such as fever and lymphadenopathy, but it is believed that all individuals with HIV will eventually develop AIDS. Due to the progressive nature of the disease which destroys the immune system and in turn threatens health and life, the ultimate outcome is death. According to the Centers for Disease Control (CDC, 1993), 315, 390 cases of AIDS have been reported in the United States since the recognition of this disease. The CDC has also estimated that 1 out of every 500 university students are HIV positive. No one is immune from this disease which infects all ages, races, and lifestyles. The disease can be transmitted through bodily fluids; by sharing needles, through semen or vaginal secretions with an infected man or woman, or from an infected mother to her newborn.

According to the 1993 CDC statistics 73% of AIDS patients are homosexual or bisexual males and 17% of adult AIDS patients are males and females who contracted the disease through contaminated needles. Other groups include hemophiliacs, infants born to mothers with AIDS, and people who have received blood transfusions. As a result of these statistics AIDS is often seen as being a

disease of the "other". In the absence of an effective vaccine to prevent this disease, the only recourse to halt this disease is through education, and schools have been one of the institutions targeted for disseminating information related to this life threatening disease. Yet attempts at education in the schools have been met with resistance due to the controversy surrounding sex education, and negative attitudes concerning this disease.

McDermott, Hawkins, Moore and Cittadino (1987) discovered that only 3.3% of university students identified teachers/schools as a source of AIDS information. The tendency to ignore teachers as a source of AIDS information may stem from prohibitions in the school community about discussing sexual matters. In other words, talking about sex gives the impression that sexual activity is condoned.

It has been determined that knowledge about AIDS does not appear to be highly correlated with a change in sexual behavior (Brown & Fritz, 1988; Katzman, Mulholland & Sutherland, 1988). Studies also reveal that people who had prejudicial attitudes towards homosexuals were less responsive to media information about AIDS (Croteau & Morgan, 1989; Stipp & Kerr, 1989). Negative messages in the media perpetuate homophobic messages which give rise to the idea HIV/AIDS is a disease of homosexuals. Therefore, heterosexual people may falsely believe that practicing safe sex does not pertain to them. In a study by Ross (1988), those subjects who were more in favor of excluding AIDS victims from public contact were more discouraging of giving AIDS-related information, and less tolerant of these victims. In addition, because Western society views sexuality as a taboo subject, death was seen as a just punishment for AIDS patients since sexual transmission is a source of AIDS.

Although past efforts in disseminating AIDS information have appeared futile, the outcomes of these studies have yielded useful information on how education can be improved. Targeting a specific population, gender differences, the cognitive level of the focus group, empathy training, credibility of speaker, active approaches, and complexity of information have proven effective in HIV/AIDS educational approaches.

Educational programs often fail because they do not meet the needs of the population to be educated. The information provided for gay middle-class men may be completely inappropriate for an inner city drug abusing population. Also, the language of the peer group needs to be considered since terms such as "exchanging body fluids" on a questionnaire may mean something different to adults than to teens (Sandberg, Rotheram-Borus, Bradley, and Martin, 1988).

Adaptation of educational materials needs to be considered when working with individuals of different racial or ethnic groups when disseminating AIDS information. For example, a Latino woman may be regarded with suspicion if she insists that her sex partner wear a condom as the values of virtue and chastity are considered as being of utmost importance for a Latino woman (Siegel, 1988).

Gender differences also need to be considered in AIDS education. Men were reported as having twice as many multiple partners as did women and men tend to rely on female partners for contraceptive protection. In addition, men are less likely to ask partners about sexual history as are women (Sunenblick, 1988).

The cognitive level of the targeted population also needs to be considered when disseminating AIDS information. In a study by DiClemente, Zorn, and Temoshok (1987), 73% of the high school respondents indicated that they were not concerned about getting AIDS. The authors concluded that this lack of concern

among adolescents is a result of the "personal fantasy" where adolescents believe that they are invulnerable to mishaps. This perception of nonsusceptibility among adolescents is further substantiated by McDermott et al. (1987) in a study of 500 university students who frequently missed items in a questionnaire involving warning signs, the relationship to opportunistic disease, and the ultimate lethal potential.

Self-concern is another factor that needs to be considered in AIDS education programs. Baldwin & Baldwin (1987) found that the 18% of undergraduate students who were most worried about contracting AIDS, actually indicated they practiced safer sex. Yet, campaigns focusing only on fear alone may be ineffectual. Empathy and concern for others is another factor that needs to be considered in AIDS education programs. Such programs need to include a discussion on the characteristics of a caring, considerate relationship since having numerous, casual relationships may promote health risks. To support this contention, a study by Royse, Dhooper & Hatch (1987) revealed that greater knowledge of the effects of AIDS on individuals is associated with greater empathy for AIDS victims.

Given the demonstrated need for accurate and effective education about HIV/AIDS and safer sex practices the delivery of such information gains importance (Royse et al., 1987). One method of dealing with the threat of AIDS and the surrounding concepts of punishment and death is to focus on accurate, succinct, abundant information given by a credible, knowledgeable source. Royse et al. (1987) state that schools should incorporate AIDS-related education to reduce the misconceptions and to remove the unfounded fears.

Due to the ineffectiveness of passive educational approaches, an action approach is encouraged by having contraceptives available for students engaging in

sexual behaviors (Knapp & VandeCreek, 1990). Action approaches have been successful in decreasing smoking (Royse et al., 1987) and reducing teen pregnancy while increasing refusal skills among students (Brown & Fritz, 1988). This type of action-oriented approach could be incorporated in an AIDS curriculum.

It has been shown that neither changes in knowledge nor behavior occur following exposure to a highly complex AIDS education program. For example, after 14 hours of AIDS education through a variety of formats (i.e., panel presentations, video tapes, experiential activities and lectures), college students did not differ significantly in knowledge or behavior from those who had not received such training (Scoundel, Kowaleski, Shields, Adams, & Brunner, 1991). While this program was comprehensive, subjects may have been given too much information about AIDS in general, and too little information about the most important variables: condom usage and abstinence (e.g., Siegel 1988). It is possible that cognitive overload interfered with retention and/or transfer of learning with subjects in the Scoundel et al. study. Following this line of reasoning, it is possible that if subjects were to focus exclusively on learning the "important variables", several dominant responses could be established that would "click in" when faced with making an important AIDS-related decision (i.e., whether to use condoms, to abstain, or share needles).

Information processing experts, on the other hand, would contend that simple repetition does not readily translate new learning into long-term memory. Information needs to be elaborated and made more meaningful in order to be retained. The more that new information is made relevant to our existing knowledge, the deeper it will be processed and, hence, remembered (Craik & Lockhart, 1972). According to Sandberg et. al. (1988), educational programs need

to go beyond passive transfer of knowledge about AIDS and need to help young people to personalize perception of their degree of risk in order to promote safe sex behaviors. Siegel (1988) concludes that the relationship between knowledge and behavior is positive but weak as the mere transfer of knowledge may not be personally relevant. Passive transfer of knowledge generally leads to modest and short term changes in behavior unless there is strong motivation and group reinforcement for change.

Siegel (1988) encourages HIV/AIDS educators to limit public information about AIDS to one or two clear and consistent messages so as not to be confusing, "Anyone who has not been involved in a monogamous relationship for at least eight years who intends to engage in a sexual behavior that creates a potential for the exchange of bodily fluids should use a condom regardless of how safe they believe their partner to be." This researcher feels that certain well intended messages such as, "reduce the number of sexual partners you have and get to know your partners", can lead to a feeling of invulnerability. Siegel concludes that it is important to limit the health recommendations we communicate to people, because while multiple messages may not seem to be competing with each other, they can be.

Schondel et. al (1991) grouped items on their AIDS questionnaire into four factors using factor analysis. "Level four" items represented the deepest level of internalization concerning the risk of contracting AIDS. Three items found to cluster around the "level four" factor included; use of condoms when having sexual intercourse, use of spermicidal jelly or creams, and avoidance of sharing needles. Integrating suggestions from Seigel (1988) and Schondel et al. (1991), the current researchers selected the proper use of condoms, abstinence from sex, and avoidance

of sharing needles as the three most "important messages" in avoiding the spread of HIV/AIDS.

The purpose of this study was to compare a broader based educational format (complex messages) with one addressing only the most important messages (simple messages) about HIV/AIDS (i.e., condom use, abstinence, avoidance of needles) and their effects on subjects' risk-minimizing choices and knowledge of HIV/AIDS. Given case studies involving high risk situations, subjects were asked to rate the importance they attached to factors that could lower their risk of contracting HIV/AIDS (on a 5-point Likert scale). It was thought that if subjects rated the "important messages" as important in a simulated high risk situation, they would more likely do so in a real world, high risk situation. Subjects were also tested on their knowledge of HIV/AIDS as a means of assessing effectiveness of treatment on knowledge levels.

The two hypotheses of this study were: (1) The three groups (complex messages, simple messages, control) would differ in the importance they attached to risk-minimizing messages as measured by the mean of the sum of the three "important items" (condom use, abstinence, and avoidance of needles) on the HIV/AIDS Behavioral Survey at posttest and follow-up, and (2) The three groups would differ in mean level of knowledge about HIV/AIDS as measured by the AIDS Knowledge Questionnaire at posttest and follow-up.

Method

Subjects

Subjects for the study included 240 freshmen (131 males and 109 females) enrolled at a small midwestern college who were randomly assigned to two treatment

groups and one control group. Median age was 19. Subjects reported the median number of partners they had been sexual with in past year to be one. Included in the study were; four Blacks, 215 Whites, 19 Asians, and two Native Americans.

Measures

An HIV/AIDS Behavioral Survey was developed to measure intended risk-minimizing behaviors. This survey consisted of a section in which subjects were given a case study involving a high risk situation. Subjects were then asked to rate the importance they attached to factors that could lower their risk of contacting AIDS (on a 5-point Likert scale). The Walters Inventory (Walters, 1992) was modified to eliminate ambiguous responses and was reviewed by a regional AIDS expert to include most recent HIV/AIDS information. The questionnaire was further modified and was subsequently used to assess knowledge of HIV/AIDS. The original inventory consisted of 28 questions that were answered with "true", "false", or "don't know". The current HIV/AIDS Knowledge Questionnaire also contained 28 questions. However, in order to avoid ambiguous responses, the "don't know" category was eliminated from the present questionnaire. The questionnaire was reviewed by a regional AIDS expert and some of the original questions were altered, and others added in order to utilize the most updated information on the questionnaire.

Procedure

All subjects were randomly assigned to one of the three groups, were greeted at the door and asked to sit with their respective groups in a well-lit auditorium. When it was time to begin the experiment, doors were closed and only those individuals who were on time were allowed to participate. Subjects were all read an introductory statement and informed about anonymity and the importance of the

study. At this point, both treatment groups were asked to remain seated and the control group was taken to another room. Both treatment groups watched a three minute slide presentation featuring Erving "Magic" Johnson (the superstar basketball player of the Los Angeles Lakers who announced that he has HIV) discussing the impact of contracting HIV/AIDS on his life. This exposure was intended to portray the seriousness of the study and foster a cooperative attitude among subjects. After the slide presentation, treatment groups were taken to separate rooms and were read introductory statements about the topic.

Simple message subjects were given a very brief introduction and clear simple messages (both verbally and on overheads) about the three most important factors in stopping the spread of AIDS (condom use, abstinence, and avoidance of sharing used needles). Additionally a mnemonic device was used to facilitate retention: C = Condoms - Use a condom together with spermicidal jelly or cream containing nonoxynol-9; A = Abstinence - Abstain from sex; N = No needles - avoid sharing used needles; Remember, C (Condoms) - A (Abstinence) N - (No Needles) - You (C-A-N) stop the spread of AIDS; C-A-N AIDS !

Complex message subjects were exposed to the same educational messages as the simple message group (both verbally and on overheads) except that the simple messages were embedded within a rich context of information about HIV/AIDS which went well beyond the depth of the simple messages presentation. Control subjects were given information on suicide prevention strategies.

Each group spent 50 minutes in their respective rooms. However, since it took much longer to deliver the complex messages than the simple messages, the simple group experimenter and helper spent more time in distributing and collecting surveys and questionnaires. After filling out surveys and questionnaires, subjects

were thanked for their participation and reminded to report to the large auditorium the following week for follow-up. Subjects were reminded of the availability of the Counseling Center for follow-up should they need this.

During the second week, all subjects were greeted and seated and asked to complete follow-up surveys and questionnaires. After the surveys and questionnaires were collected, all subjects were fully debriefed, presented with HIV/AIDS information, and allowed to direct questions to a regional expert on HIV/AIDS. After the hour was up, subjects who wished to leave were dismissed, and others were invited to stay for more discussion. Personnel at the Heidelberg College Counseling Center were aware of the nature of this procedure and were available to provide back-up services if needed. It did not become necessary, however, to utilize this precaution.

Results

The posttest questionnaire total scale data were subjected to a single-factor ANOVA to test the null hypothesis of no treatment effects, using a significance criterion of .05. The treatment conditions were (1) simple messages, (2) complex messages, and (3) a control. $F(2,130) = 3.41$, $p < .05$ warranted rejection of the null hypothesis; at least one pair of means is significantly different. A Tukey post-hoc multiple comparison procedure revealed that the "complex messages" group scored significantly higher, on average, than the "simple messages" group ($p < .05$). Relative to the "simple messages" treatment, the effect size for the "complex messages" treatment was .59. No other simple mean comparisons were significant. A test of the homogeneity of variance assumption revealed that it was tenable (Bartlett-Box $F = .14$, $p > .05$). The results are displayed in Table 1.

Insert Table 1 about here

The posttest survey total scale data were analyzed by a single-factor ANOVA. $F(2,130) = 2.74$, $.05 < p < .10$ did not permit rejection of the null hypothesis of no treatment effects at the .05 level of significance. There was no evidence of a violation of the homogeneity of variance assumption (Bartlett-Box $F = .11$, $p > .05$). The results are summarized in Table 1.

The follow-up questionnaire total scale data, using a single-factor ANOVA, yielded a significant difference among the means of the treatment groups [$F(2,107) = 8.26$, $p < .001$]. The Tukey post-hoc procedure revealed that the "complex messages" mean and the control group mean were each higher than the "simple messages" mean ($p < .05$). The effect size of the "complex messages" treatment, relative to the "simple messages" treatment, was .98. The homogeneity of variance assumption was satisfied (Bartlett-Box $F = .45$, $p > .05$). Summary statistics are found in Table 2.

Insert Table 2 about here

The follow-up survey total scale data, again using a single-factor ANOVA, resulted in a significant difference among the treatment means [$F(2,107) = 3.26$, $p <$

.05]. Applying the Tukey multiple comparison procedure, the "complex messages" mean was significantly greater than the "simple messages" mean ($p < .05$). The size of the "complex messages" treatment effect was .55, relative to the "simple messages" treatment. There were no other significant comparisons found. The assumption of equal variances in the population was met (Bartlett-Box $F = 1.25$, $p > .05$). Results are depicted in Table 2.

SPSS statistical data analysis software was used to compute the descriptive and inferential statistics (SPSS, 1990). Effect sizes were computed using procedures adapted from Glass and Hopkins (1984).

Discussion

After one week, the complex messages group demonstrated greater ability than the simple messages group to pick out the most important risk-minimizing behaviors. While the groups did not significantly differ immediately at posttesting, there was a trend indicating greater ability of the two treatment groups over the control group and of the complex messages group over the simple messages group.

The "complex messages" treatment group exhibited relatively more knowledge about HIV/AIDS and its transmission than did the "simple messages" treatment group. This effect was even more pronounced at one week's follow-up. Conversely, the "complex messages" treatment group did not differ from the control group on knowledge about HIV/AIDS and its transmission. The complex messages may have contained a greater level of meaningfulness, whereas the simple messages may have actually inhibited learning, perhaps due to their superficial and trite nature. Information processing theory would explain this result in terms of greater potential

for cognitive associations and schema in the complex messages group and greater likelihood of forgetting in the simple messages group (Mayer, 1992).

Baldwin and Baldwin (1987) found that more knowledgeable subjects were about HIV/AIDS transmission, the less attention they paid to risk-minimizing behaviors. In the current study, subjects who received complex messages were both more knowledgeable about AIDS transmission and more likely to pick out the most important risk-minimizing behaviors than those who received simple messages.

Scoundel et. al. (1991) found that subjects receiving 14 hours of AIDS education did not differ significantly in AIDS-Related knowledge or behavior from those who had not received such training. In the present study, while those receiving no treatment actually demonstrated more knowledge at follow-up than those receiving simple messages, those receiving complex messages were superior to the simple message subjects on both knowledge of HIV/AIDS and ability to select the most important risk-minimizing behaviors in a simulated high risk task.

Sandberg et al. (1988) suggest that HIV/AIDS educators need to be clear in educational messages. In the present study, the group receiving complex messages was more knowledgeable about HIV/AIDS than the simple messages group at posttesting. After one week, both the complex messages group and the control group were more knowledgeable about HIV/AIDS than the simple messages group as measured by the HIV/AIDS Knowledge Questionnaire. These findings suggest that the clarity of the messages may be less important than the depth of the processing of the messages.

Campbell and Stanley (1963) cite threats to internal and external validity. To minimize threats to internal and external validity in the current study, pretesting was omitted. However, absence of pretesting may limit current results as it is uncertain

that subjects had equivalent HIV/AIDS knowledge before treatment. Higher awareness levels of HIV/AIDS for the control group than for the simple-messages group may reflect pretreatment differences. Random assignment enhances equivalency of groups prior to administering experimental treatments (Wiersma, 1986). To promote equivalency of groups, random assignment was used. It is possible, however, that pretreatment HIV/AIDS information levels differed among groups in the current study.

In general, it appears that a more complex educational format was superior to a simple message approach in promoting both HIV/AIDS knowledge and risk-minimizing choices. Simple repetition is insufficient for transferring meaningful information into memory (Craik and Lockhart, 1972). Additionally, it appears as if educational programs will need to go beyond passive transfer of knowledge about HIV/AIDS in order to help young people personalize perceptions of the degree of risk in order to promote safe sex behaviors.

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TABLE 1

Means and Standard Deviations of Posttest Questionnaire and Survey Total Scales by Treatment Conditions

Questionnaire	Treatments		
	Control	Simple Messages	Complex Messages
M	23.64	23.15	24.48
SD	2.35	2.24	2.44
Survey			
M	11.82	12.23	12.80
SD	2.09	2.01	1.95
n	50	39	44

Note. For the questionnaire, the minimum possible score was 0, the maximum possible score was 28; for the survey, the minimum possible score was 3, the maximum possible score was 15.

TABLE 2

Means and Standard Deviations of Follow-up Questionnaire and Survey Total Scales by Treatment Conditions

Questionnaire	Treatments		
	Control	Simple Messages	Complex Messages
M	23.61	22.52	24.55
SD	1.91	2.08	2.23
Survey			
M	12.05	11.56	12.81
SD	2.14	2.27	1.75
n	41	32	37

Note. For the questionnaire, the minimum possible score was 0, the maximum possible score was 28; for the survey, the minimum possible score was 3, the maximum possible score was 15.